



**CERTIFICATE**

A03/Z02

**No. A/22-114794**

**Rev 00**

**Date**

2022-06-21

**Page**

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A02/Z03

INSPECTION CERTIFICATE acc to  
EN 10204 3.1

A06

PROCESSKONTROLL ITEMS AB  
BOX 2088  
444 02 STORA HÖGA  
SWEDEN

INSPECTION STAMP

QA-TUBE

|   |  |                          |                 |                          |        |        |          |                |               |  |           |    |  |
|---|--|--------------------------|-----------------|--------------------------|--------|--------|----------|----------------|---------------|--|-----------|----|--|
| <b>Customer References</b> <span style="float: right;">A07</span><br>762588<br><br>003-00991 ITEMS -W | <b>Sandvik References</b> <span style="float: right;">A08</span><br><table border="0"> <tr> <td><b>Order No.</b></td> <td><b>Subs No.</b></td> <td><b>SMT Dispatch note</b></td> </tr> <tr> <td>585753</td> <td>710603</td> <td>16346/54</td> </tr> <tr> <td><b>SMT No.</b></td> <td><b>C.Code</b></td> <td></td> </tr> <tr> <td>300-43522</td> <td>29</td> <td></td> </tr> </table> | <b>Order No.</b>         | <b>Subs No.</b> | <b>SMT Dispatch note</b> | 585753 | 710603 | 16346/54 | <b>SMT No.</b> | <b>C.Code</b> |  | 300-43522 | 29 |  |
| <b>Order No.</b>  | <b>Subs No.</b>  | <b>SMT Dispatch note</b> |                 |                          |        |        |          |                |               |  |           |    |  |
| 585753  | 710603   | 16346/54                 |                 |                          |        |        |          |                |               |  |           |    |  |
| <b>SMT No.</b>  | <b>C.Code</b>  |                          |                 |                          |        |        |          |                |               |  |           |    |  |
| 300-43522   | 29   |                          |                 |                          |        |        |          |                |               |  |           |    |  |

|   |   |                |             |      |              |              |  |        |  |
|---|---|----------------|-------------|------|--------------|--------------|--|--------|--|
| <b>Material description</b> <span style="float: right;">B01/B04</span><br>SEAMLESS STAINLESS COLD FINISHED<br>INSTRUMENTATION TUBING<br><br><b>Metallurgical process</b> <span style="float: right;">C70</span><br>Electric furnace | <b>Steel/material Designations</b> <span style="float: right;">B02</span><br><table border="0"> <tr> <td><b>Sandvik</b></td> <td><b>AISI</b></td> </tr> <tr> <td>3R60</td> <td>TP316/TP316L</td> </tr> <tr> <td><b>EN no</b></td> <td></td> </tr> <tr> <td>1.4435</td> <td></td> </tr> </table> | <b>Sandvik</b> | <b>AISI</b> | 3R60 | TP316/TP316L | <b>EN no</b> |  | 1.4435 |  |
| <b>Sandvik</b>  | <b>AISI</b>   |                |             |      |              |              |  |        |  |
| 3R60  | TP316/TP316L  |                |             |      |              |              |  |        |  |
| <b>EN no</b>  |   |                |             |      |              |              |  |        |  |
| 1.4435  |   |                |             |      |              |              |  |        |  |

|   |
|---|
| <b>Technical requirements</b> <span style="float: right;">B03</span><br>ASTM A-213-19 AW, ASME SA-213-ED-19 AW, ASTM A-269-15A<br>NACE MR0175/ISO 15156-3:-2015, NACE MR0103/ISO 17945-1:-2015<br>PED 2014/68/EU EN 10216-5 TC1<br>HRB MAX 80 |
|---|

|  |                                    |             |                   |                 |                |            |           |           |
|--|------------------------------------|-------------|-------------------|-----------------|----------------|------------|-----------|-----------|
| <b>EXTENT OF DELIVERY</b> <span style="float: right;">B07-B13</span> |                                    |             |                   |                 |                |            |           |           |
| <b>It</b>  | <b>Product designation</b>         | <b>Heat</b> | <b>Lot</b>        | <b>Pieces</b>   | <b>Kg</b>      | <b>M</b>   |           |           |
| 02   | THT-3R60-12.7-1.24<br>12.70 X 1.24 | 043593      | 95561             | 15              | 32.0           | 90.00      |           |           |
|  |                                    |             |                   | Total           | 15             | 32.0 90.00 |           |           |
| <b>KEY TO HEAT</b>   |                                    |             | <b>KEY TO LOT</b> |                 |                |            |           |           |
| <b>Heat Code</b>   | <b>Heat No.</b>                    |             |                   | <b>Lot Code</b> | <b>Lot No.</b> |            |           |           |
| 043593   | 564989                             |             |                   | 95561           | 2063783-11     |            |           |           |
| <b>TEST RESULTS</b>  |                                    |             |                   |                 |                |            |           |           |
| <b>Chemical composition (weight%)</b>                                |                                    |             |                   |                 |                |            |           |           |
| <b>Heat</b>  | <b>C</b>                           | <b>Si</b>   | <b>Mn</b>         | <b>P</b>        | <b>S</b>       | <b>Cr</b>  | <b>Ni</b> | <b>Mo</b> |
| 043593   | 0.018                              | 0.51        | 1.61              | 0.030           | 0.008          | 17.63      | 13.14     | 2.62      |
|  | <b>Co</b>                          | <b>Ti</b>   | <b>Al</b>         | <b>N</b>        |                |            |           |           |
| 043593   | 0.16                               | <0.003      | 0.004             | 0.040           |                |            |           |           |

|  |         |
|--|---------|
| <b>Quality assurance - Sofia Åkesson / Q-Manager</b><br>MTC Service / Certificates | A05/Z02 |
|--|---------|

A01

AB SANDVIK MATERIALS TECHNOLOGY Reg No. 556234-6832 VAT No. SE556234683201  
SE-81181 SANDVIKEN SWEDEN www.materials.sandvik mtc\_service.smt@sandvik.com



**Chemical composition, product (weight%)**

| Heat   | C     | Si   | Mn   | P     | S     | Cr    | Ni    | Mo   |
|--------|-------|------|------|-------|-------|-------|-------|------|
| 043593 | 0.017 | 0.45 | 1.62 | 0.030 | 0.006 | 17.54 | 13.18 | 2.64 |
|        | N     |      |      |       |       |       |       |      |
| 043593 | 0.041 |      |      |       |       |       |       |      |

**Tensile test at room temperature**

| Lot   | Yield strength |       | Tensile strength | Elongation |    |
|-------|----------------|-------|------------------|------------|----|
|       | MPa            | MPa   | MPa              | %          | %  |
|       | Rp0.2          | Rp1.0 | Rm               | A          | 2" |
| 95561 | 300            | 327   | 585              | 63         | 60 |

**Hardness test**

| Lot   | Min | Max |
|-------|-----|-----|
|       | HRB | HRB |
| 95561 | 76  | 77  |

**Following controls/tests have been satisfactorily performed:**

- Flattening test.
- Flaring test
- 100% PMI-test.
- Intergranular corrosion test acc to ASTM A-262 PR.E and EN ISO 3651-2A
- Leak test: Eddy current test acc to EN ISO 10893-1, ASME SA-1016.
- Visual inspection and dimensional control.

**Heat Treatment:**

Solution annealed at a temperature of Min 1040° C and quenched.

**Marking:**

SANDVIK 3R60 ASTM/ASME A/SA213 A269 COLD EN 10216-5 TC1 AW TP 316/TP 316L EN 1.4435 CFA SML 12.70 X 1.24 MM 1/2'' X 18 BWG/SWG HT 564989 SZ LOT 2063783-11 M ADE BY SANDVIK IN CZECHIA \*QA-TUBE\*

The raw material is free from radioactive contamination.

Material free from mercury contamination.

No welding or weld repair.

Approved acc. AD 2000-Merkblatt W0 and certified acc. to Pressure Equipment Directive (2014/68/EU, Annex 1 para 4.3) by TUEV NORD; notified body, reg.no. 0045.

The number of tests are based on the size of the manufacturing lot before cutting to finished lengths.

The delivered products comply with the specifications and requirements of the order.

The material is manufactured according to a Quality system, approved and registered to ISO 9001:2015.





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The certificate is produced with EDP and valid without signature.

TEST RESULTS TRANSFERRED FROM CERTIFICATE NO C-4548/50

